

## **PRIORITY BASED SPECTRUM SENSING AND SECURITY SYSTEM USING RADIO COGNITIVE NETWORK**

**M. Madhumitha<sup>1\*</sup> and M. Harikrishnan<sup>2</sup>**

<sup>1</sup> PG student, Department of Computer Science and Engineering, A.R.J College of Engineering and Technology, Mannargudi, Thiruvavur – 614 403, Tamil Nadu.

<sup>2</sup> Asst. Professor, Department of Computer Science and Engineering, A.R.J College of Engineering and Technology, Mannargudi, Thiruvavur – 614 403, Tamil Nadu.

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### **ABSTRACT**

Today increasing demand for the radio spectrum access due to many new wireless networks such Bluetooth, share it and so on. The radio spectrum is the part of the Electromagnetic spectrum with frequencies from 3 KHz to 300 GHz and these are generally used in Telecommunication. Existing method tells that in a Cognitive Radio network, secondary users can access unused licensed spectrum bands. The Collaborative spectrum sensing has been used for the sensing reports from Secondary User's are sent to one or more decision making authorities to produce more reliable decisions on the spectrum usage. However, in the presence of misbehaving or malicious secondary users, the integrity of the reports sent by SUs needs to be assessed to avoid interference with Primary User's. Our proposed is an efficiently accessing the spectrum sharing among primary users and secondary users. In this project, they consider a cognitive radio with the primary and secondary links. By using Cognitive Radio, the unlicensed spectrum uses the licensed channel for data transmission. The proposed Channel Side Information at the cognitive radio network is generally used to maintain which primary user channels are ideal and arranged them in a priority based queue. The proposed system uses the Spectrum Sharing algorithm which calculates the load of the information which transfers. It provides a power minimization allocation approach, low power consumption. Result show that the both spectrum sensing and data transmission/receiving functions.

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\* **Corresponding Author:** M. Madhumitha, [madhumithamuniasamy2@gmail.com](mailto:madhumithamuniasamy2@gmail.com)

## INTRODUCTION

Energy-efficient wireless communications have great ecological and economic benefits and are becoming more and more important in future wireless systems. Recently, an EE technique was introduced to cognitive radio systems for resource allocation. This motivates the concept of spectrum reuse that allows secondary users to utilize the radio spectrum licensed to the primary users when the spectrum is temporarily not being utilized. The key technology behind spectrum reuse is cognitive radio, which consists of three essential components: (1) spectrum sensing: The SUs are required to sense and monitor the radio spectrum environment within their operating range to detect the frequency bands that are not occupied by PU; (2) Dynamic spectrum management: cognitive radio networks are required to dynamically select the best available bands for communications; and (3) Adaptive communication: a cognitive radio device can configure its transmission parameters to opportunistically make best use of the ever-changing available spectrum. In this proposed system, it uses Cognitive radio automatically detects available channels in wireless spectrum, then accordingly changes its transmission or reception parameters to allow more concurrent wireless communications in a given spectrum band. Here the Channel side information (CSI) at the CR which stores the information about the spectrum holes and status of the Primary User's. By using this method, it avoids the enormous radiations by decreasing the number of base stations within a small range and it also energy efficiency one. The advantage of the proposed system are as follows, Reduces the radiation affects, Provide a power minimization allocation, Increase the energy efficiency in spectrum sensing cognitive radio systems, Provide the extremely low power consumption CR wireless sensor, It provides efficiency of data transmission, Reduces traffic, Avoid Malicious secondary user's(MSUs). This system uses the Spectrum Sharing algorithm which stores the status of the ideal primary spectrum in a queue based priority. So that the if anyone of the ideal primary user has come online then it switches to the other ideal primary spectrum. Spectrum mobility: Process by which a cognitive-radio user changes its frequency of operation. Cognitive-radio networks aim to use the spectrum in a dynamic manner by allowing radio terminals to operate in the best available frequency band, maintaining seamless communication requirements during transitions to better spectrum. Spectrum sharing: Spectrum sharing cognitive radio networks allows cognitive radio users to share the spectrum bands of the licensed-band users. However, the cognitive radio users have to restrict their transmit power so that the interference caused to the licensed-band users is kept below a certain threshold. Sensing-based Spectrum sharing: In sensing-based spectrum sharing cognitive radio networks, cognitive radio users first listen to the spectrum allocated to the licensed users to detect the state of the licensed users. Based on the detection results, cognitive radio users decide their transmission strategies.

## RELATED WORK

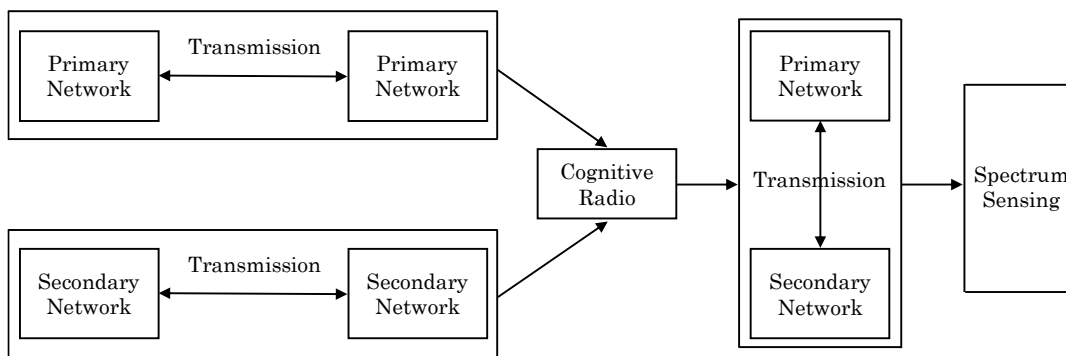
The existing system uses the Cognitive Radio network where secondary users can access unused licensed spectrum bands. An important activity in a CRN is to monitor the unused spectrum and to allocate the spectrum holes. Collaborative spectrum sensing (CSS) has been proposed in which sensing reports from Secondary User's are sent to one or more decision making authorities to produce more reliable decisions on the state of the spectrum

usage. However, in the presence of misbehaving or malicious Secondary User's (MSUs), the integrity of the data will be lost. The disadvantages of the existing system are as follows, Interference Occurs in Unlicensed Secondary Network. Unaware of Secondary User Selection for Licensed Bandwidth, Delay in Data Transmission, High power consumption, Lack of energy efficiency, Traffic occurs during accessing the spectrum holes.

## PROPOSED SYSTEM

Cognitive radio network detects available channels in the wireless spectrum, then accordingly changes its transmission or reception parameters to allow more concurrent wireless communications in a given spectrum band at one location. In this paper, we minimize the power which brings energy efficiency enhancement to the cognitive radio network for both schemes of spectrum sharing and sensing over fading environments. Cognitive Radio network the data transmission between honest secondary users and (HSUs) and secondary user base station (SUBS). We explore the significance of providing extra channel side information (CSI) at the secondary transmitters under spectrum sharing for single and multiple links. Then, having the extra CSIs at the secondary transmitter can be very difficult, reduce these extra CSIs and derive new expressions for corresponding transmission power at the secondary transmitter. The imperfect side information about cross channels for single secondary link is also investigated. The proposed system uses the Spectrum sharing algorithm which detects the ideal primary spectrum and also it allots the ideal spectrum to the secondary users. By using this, we can speed up the transmission compared to the secondary network. This system reduces the radiation effects. Provide a power minimization allocation. Increase the energy efficiency in spectrum sensing cognitive radio systems. Provide the extremely low power consumption CR wireless sensor. It provides throughput efficiency of data transmission. Reduces traffic. Avoid Malicious Secondary User's (MSUs)

**Figure – 1:** *System Overview*



## SYSTEM MODEL

The proposed system model consists of series steps for allotting the ideal spectrum to the secondary users and to transmit the data using maximum and minimum frequency ranges.

User module allows the users to choose which file to be transferred to the destination. Here the user selects the file which is to be transferred to the destination. The

user generally sent the information to the destination. So in this module, they select which data to be shared.

Transferring through primary spectrum module allows to transfer that file to the destination using primary medium which means the sender should paid to access the spectrum holes. Normally by using this we can transfer the file as fast.

Transferring through the secondary spectrum module allows to transfer that file to the destination using secondary spectrum which means the user should access the free networks such as Wi-Fi, Bluetooth, Share-It etc. Compared to the primary spectrum the speed is low.

Transferring through the cognitive radio network module allows to transfer the file to the destination using cognitive medium which means it allots the unused primary spectrum holes to the secondary users. By using this, the secondary user can share the file as fast as compared to the secondary medium. The output of this system differentiates the speed of the transferring.

Using 2.4 GHz module shows the low frequency range of the Wi-Fi network

It shows how the file transferred between the systems.

Using 5 GHz module shows the maximum frequency range of the Wi-Fi network. It also shows how the file transferred between the systems.

## CONCLUSION

Cognitive radio which allots the ideal primary spectrum to the secondary users. So that the efficiency of transferring the data will be high when compared to the secondary spectrum. It shows the efficiency between the primary, secondary and cognitive spectrum. By using the cognitive spectrum we can makes use of the available base stations for using the high speed data transfer. There is no delay in data transmission. The energy obtained for this system is also low when compared to the other networks. The number of base stations usage also low so that the radiation causes disease will be reduced. The proposed scheme presented spectrum sensing in an effective manner.

## FUTURE ENHANCEMENT

In future they will investigate the performance of our algorithm for large mesh networks. The search for breakthrough radio technologies that can scale to meet future demands both in terms of spectrum efficiency and application performance.

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